Tech Tip
Contivity Secure IP Services Gateway

Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Contents

Contents 1
Overview 1
Sample Configuration 2
- Setup 2
- Configuring WS1 2
- Configuring WS2 3
- Configuring CES 3
  - Configuring network parameters 3
  - Configuring Branch Office connection 4
  - Configuring Branch Office IPSec parameters 12
- Configuring BCM 15
  - Configuring Interfaces 15
  - Configuring Branch Office tunnel parameters 17
  - Configuring local and remote accessible networks 21
  - Verifying firewall rules 24
  - Enabling IPSec 25
- Event Log 26

Overview

This technical tip illustrates a sample IPSec peer-to-peer tunnel configuration between Contivity Secure IP Services Gateway and Business Communication Manager (BCM) using pre-shared key authentication.

Tech Tip
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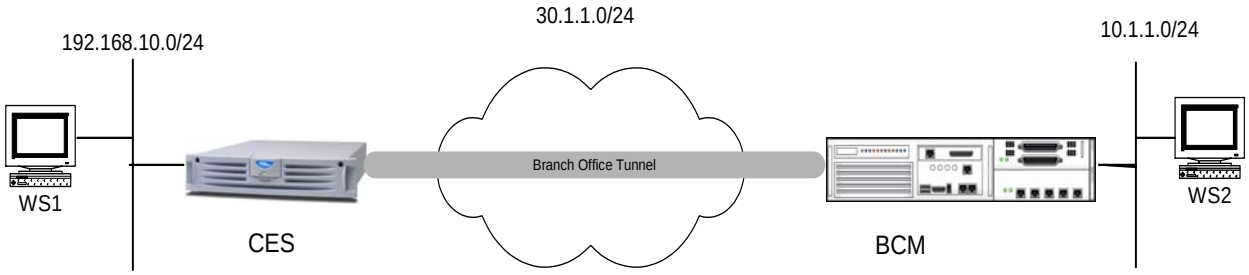
Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Sample Configuration

Setup



WS1 – Windows 2000 workstation, IP 192.168.10.11/24;
WS2 - Windows 2000 workstation, IP 10.1.1.10/24;
CES – Contivity Secure IP Services Gateway, code version V04_85, management IP 192.168.10.1/24, private IP 192.168.10.2/24, public IP 30.1.1.2/24
BCM – Business Communication Manager, Private IP (LAN 1) 10.1.1.1/24, public IP (LAN 2) 30.1.1.1/24.

The goal of the configuration is to set up an IPSec peer-to-peer branch office tunnel between a CES and a BCM using 3DES with MD5 integrity and a pre-shared key authentication.

Configuring WS1

Configure the IP address (192.168.10.11/24) on the WS1 and the CES private interface (192.168.10.2) as the default gateway:

```
C:\>ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection 2:

        Connection-specific DNS Suffix  . :
        IP Address. . . . . . . . . . . . : 192.168.10.11
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 192.168.10.2
```

Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Configuring WS2

Configure the IP address (10.1.1.10/24) on the WS2 and the NG private interface (10.1.1.1) as a default gateway:

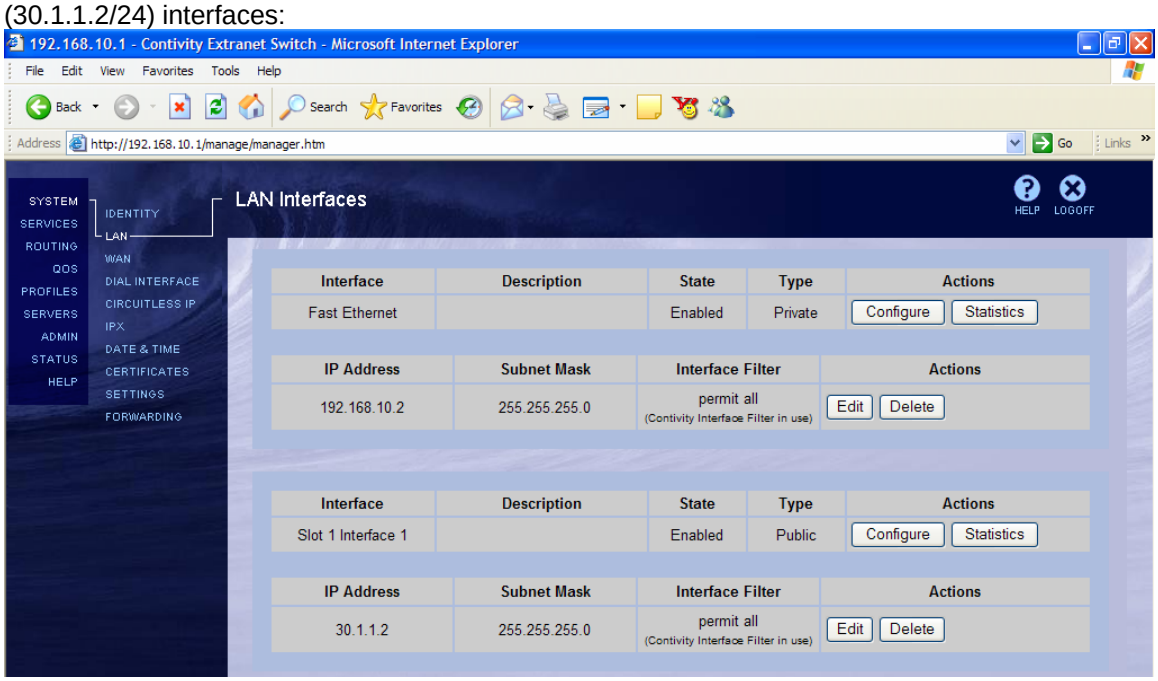
```
C:\>ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection 2:

        Connection-specific DNS Suffix  . :
        IP Address. . . . . . . . . . . . : 10.1.1.10
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 10.1.1.1
```

Configuring CES

Configuring network parameters

Configure IP address for management (192.268.10.1/24), private (192.168.10.2/24) and public (30.1.1.2/24) interfaces:



In this configuration CES and BCM are directly connected, if a router is used between CES and BCM a public default gateway must be configured on **Routing→Static Routes** screen by clicking **Add Public Route** and specifying the address of a public default router.

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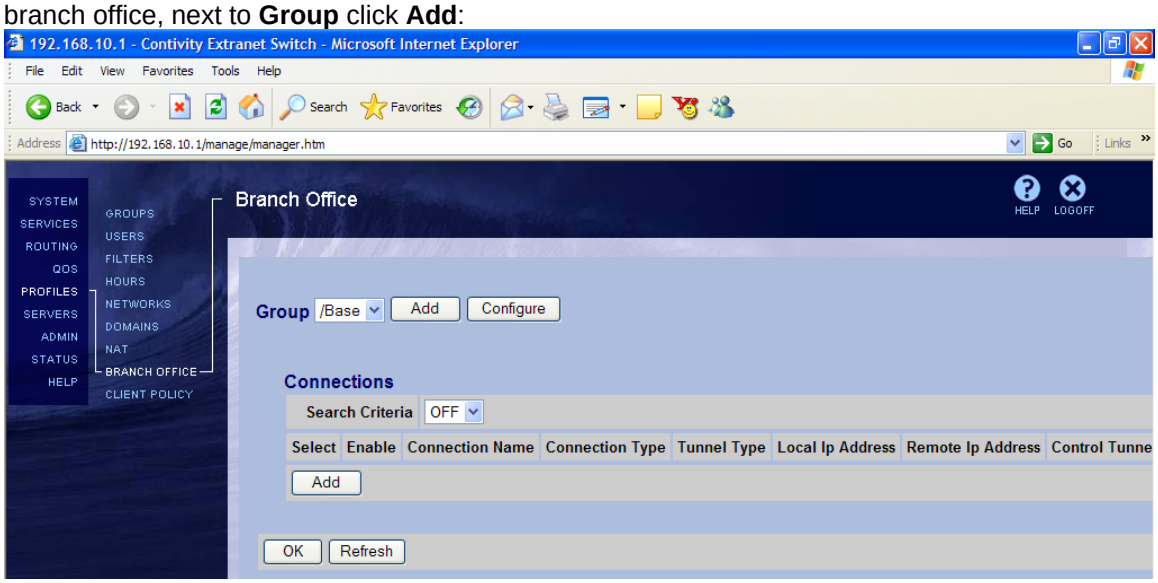
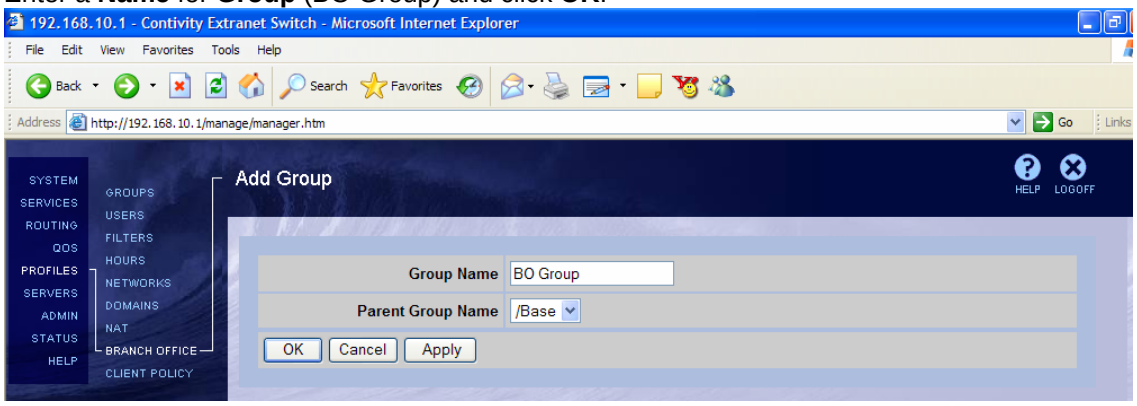
Configuring Branch Office connection

Configure the BO connection. Navigate **Profiles →Branch Office**. To add a new group for the branch office, next to **Group** click **Add**:



Enter a **Name** for **Group** (BO Group) and click **OK**:



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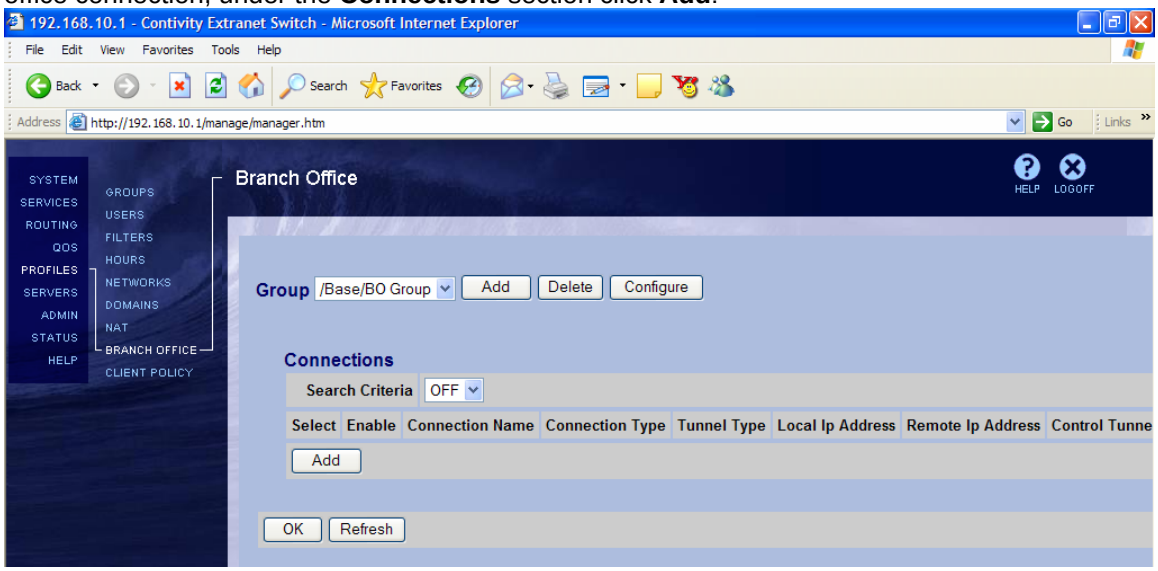
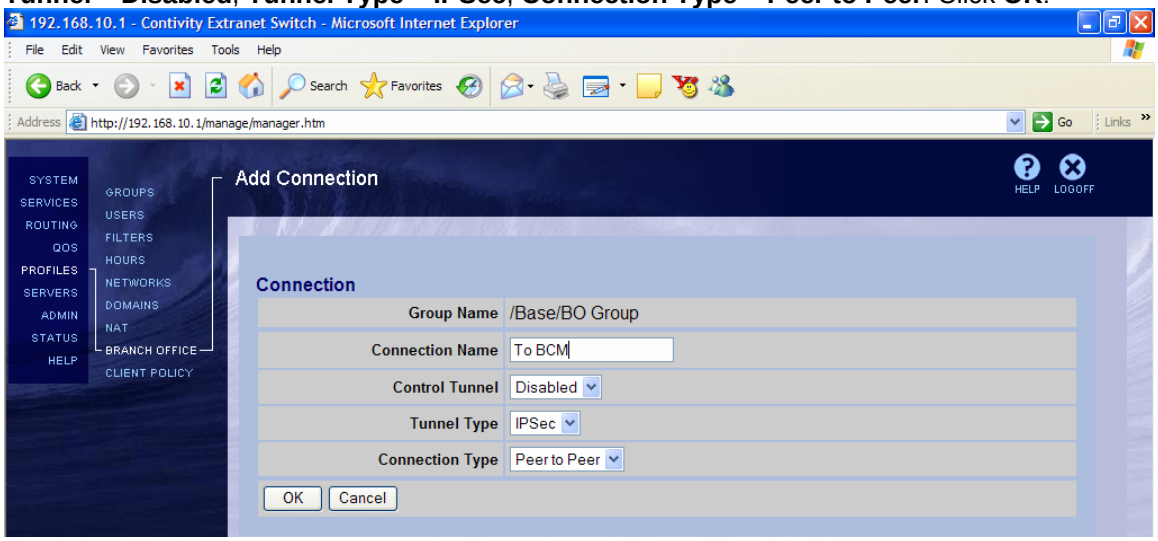
From the drop down menu next to **Group,** select the newly created group. To add a new branch office connection, under the **Connections** section click **Add**:

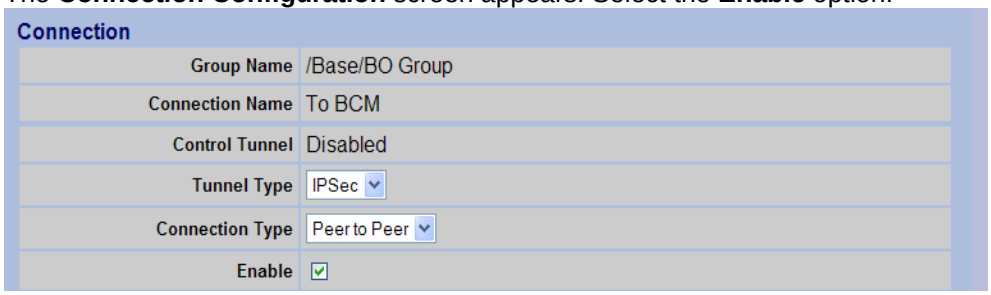


Enter a **Connection Name** (To BCM), leave the rest of the fields to their defaults – **Control Tunnel** – **Disabled**, **Tunnel Type** – **IPSec**, **Connection Type** – **Peer to Peer**. Click **OK**:

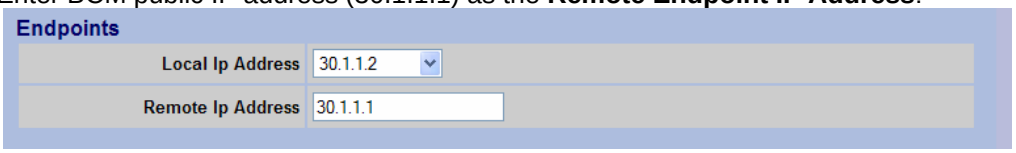


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

The **Connection Configuration** screen appears. Select the **Enable** option:

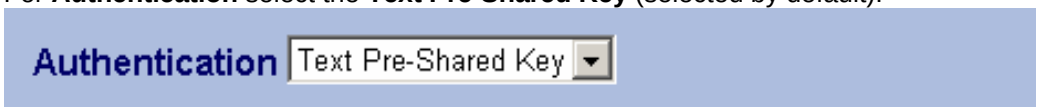


Select CES public IP address (30.1.1.2) as the **Local Endpoint IP Address**;
Enter BCM public IP address (30.1.1.1) as the **Remote Endpoint IP Address**:

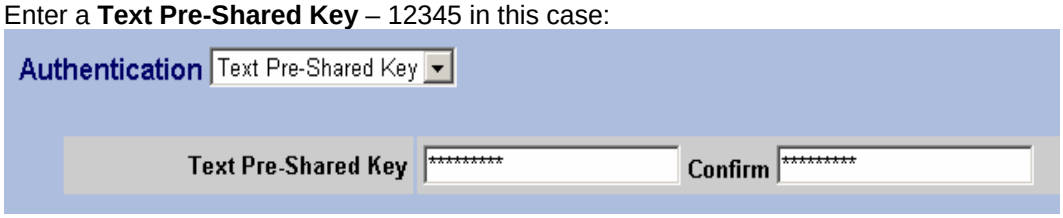


Leave the **Filter** at **Permit All**:

For **Authentication** select the **Text Pre-Shared Key** (selected by default):



Enter a **Text Pre-Shared Key** – 12345 in this case:



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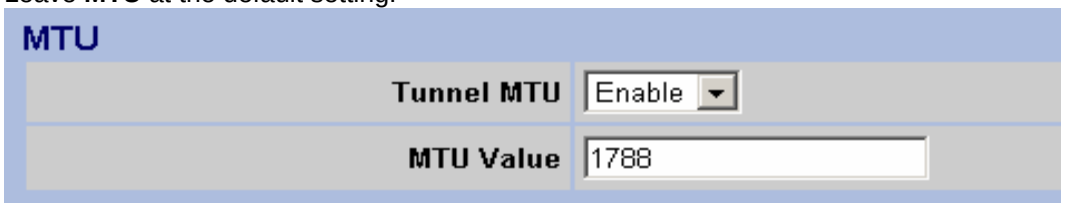
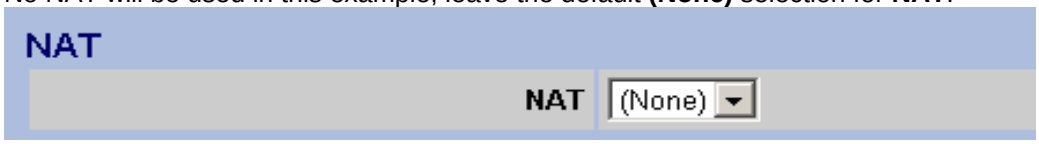
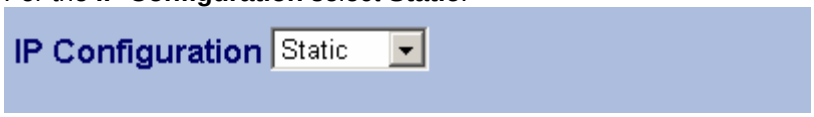
Leave **MTU** at the default setting:



No NAT will be used in this example, leave the default **(None)** selection for **NAT**:

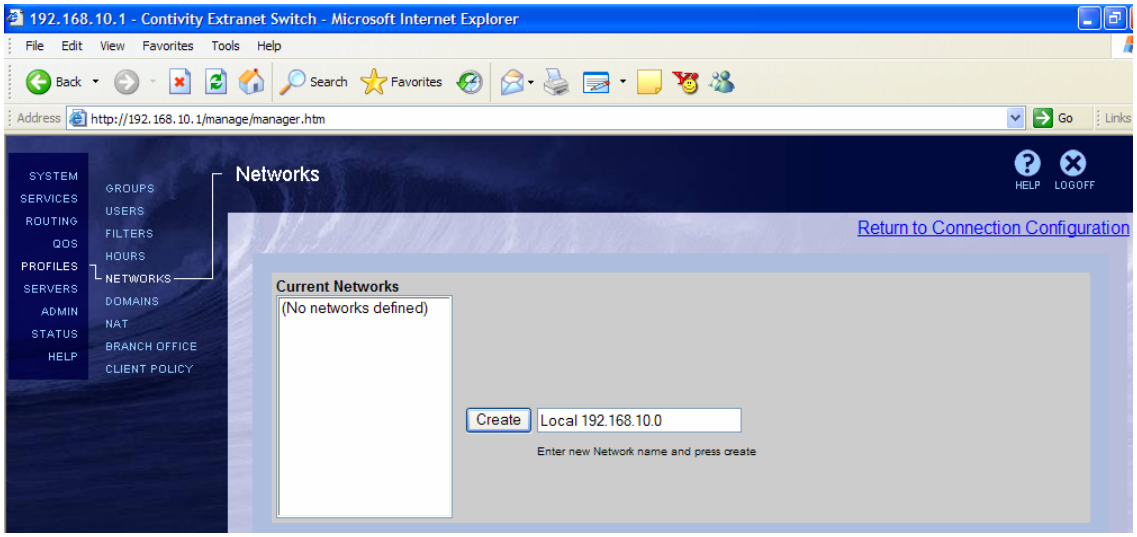


For the **IP Configuration** select **Static**:



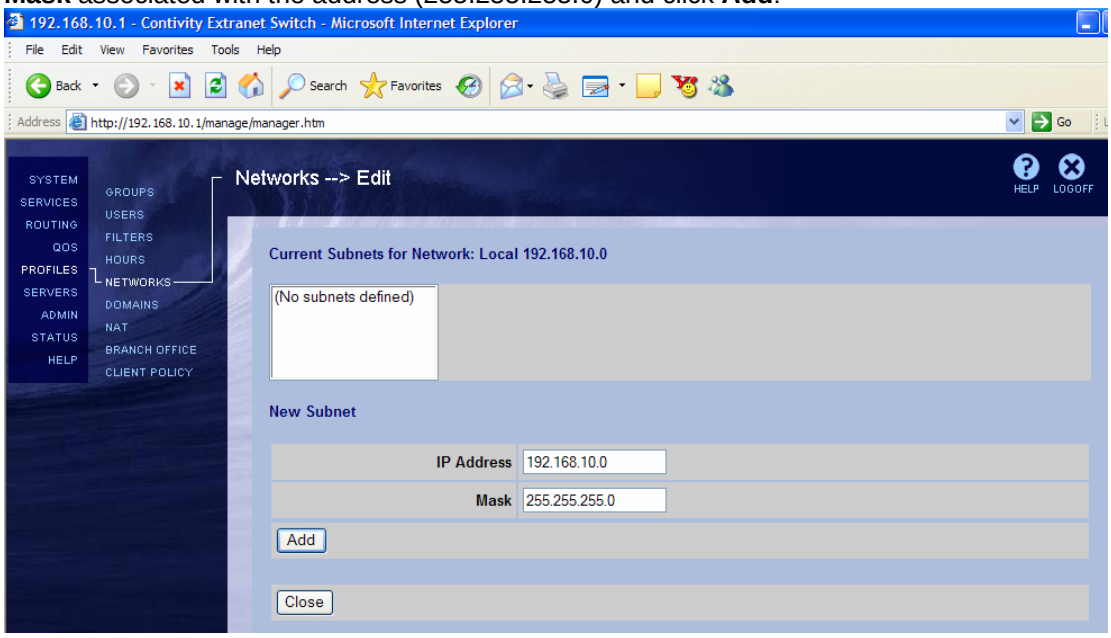
Define local accessible networks. Next to **Local Network** select **Create Local Network**:

The **Networks** screen appears. Enter the name of the network (local 192.168.10.0) to be created and click **Create**:

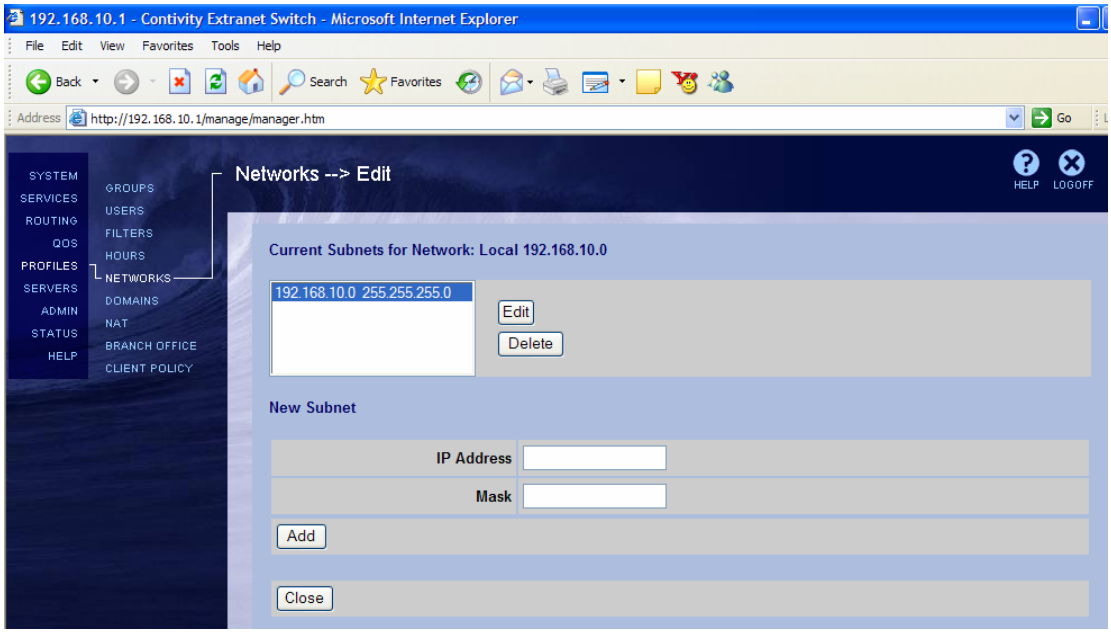


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Enter the IP address of the **Local Accessible Network** (CES private network, 192.168.10.0), **Mask** associated with the address (255.255.255.0) and click **Add**:

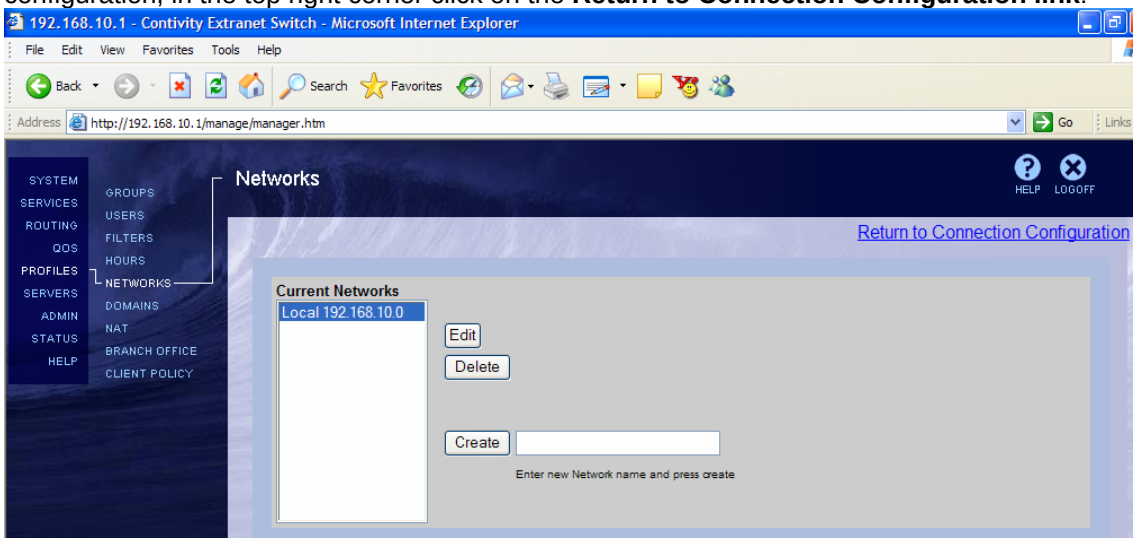


Listed under the **Current Subnets for Network** window is the configured subnet for the network. Click **Close**:

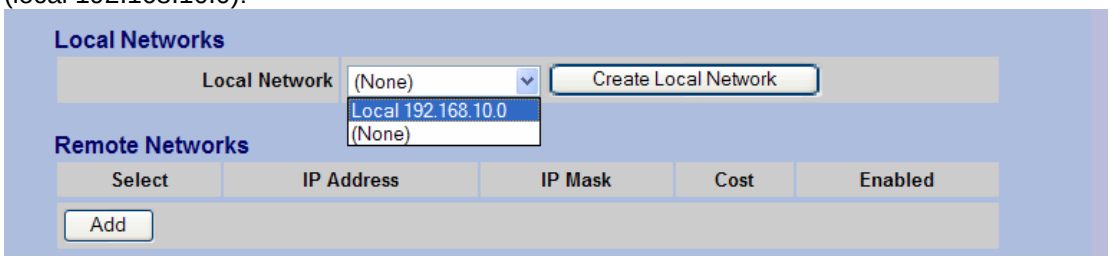


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

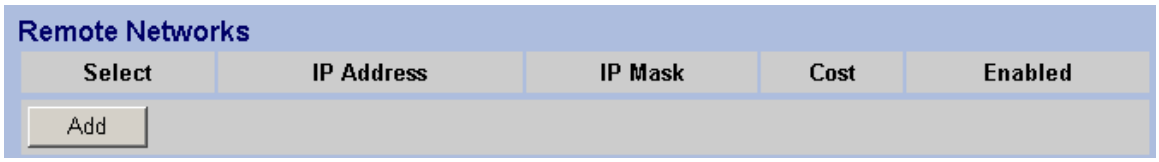
Listed under the **Current Networks** is the configured network. To return to the branch office configuration, in the top right corner click on the **Return to Connection Configuration link**:



From the drop-down list next to **Local Network** select the **newly configured local network** (local 192.168.10.0):

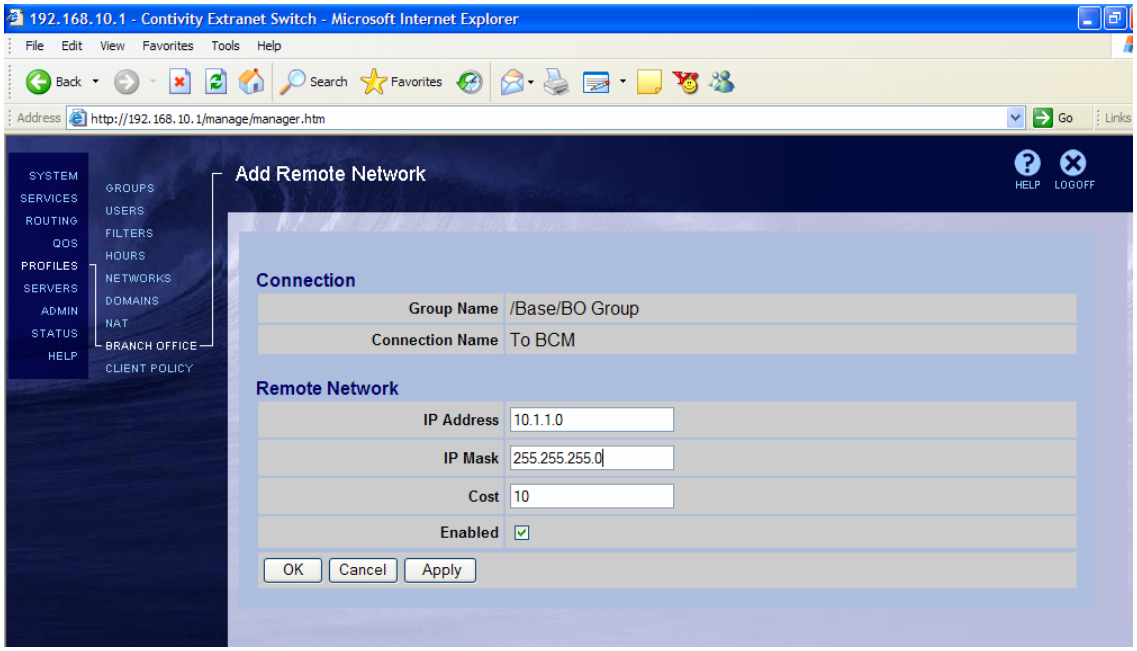


Define the remote accessible networks. Under the **Remote Networks** click **Add**:

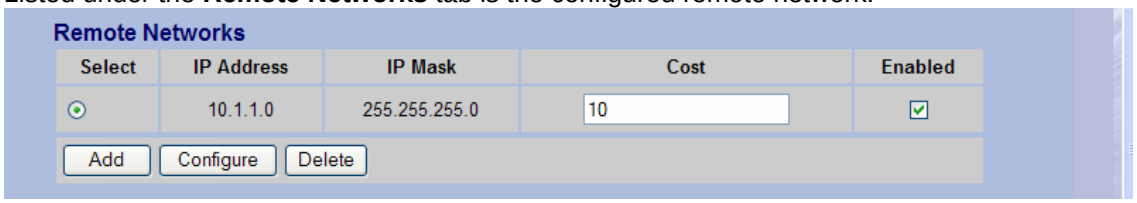


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

The **Add Remote Network** screen appears. Enter the **IP Address** of the Remote Network (BCM private network LAN 1 (10.1.1.0), and **Mask** (255.255.255.0). Leave the **Cost** to its default. Select **Enabled** and click **OK**:

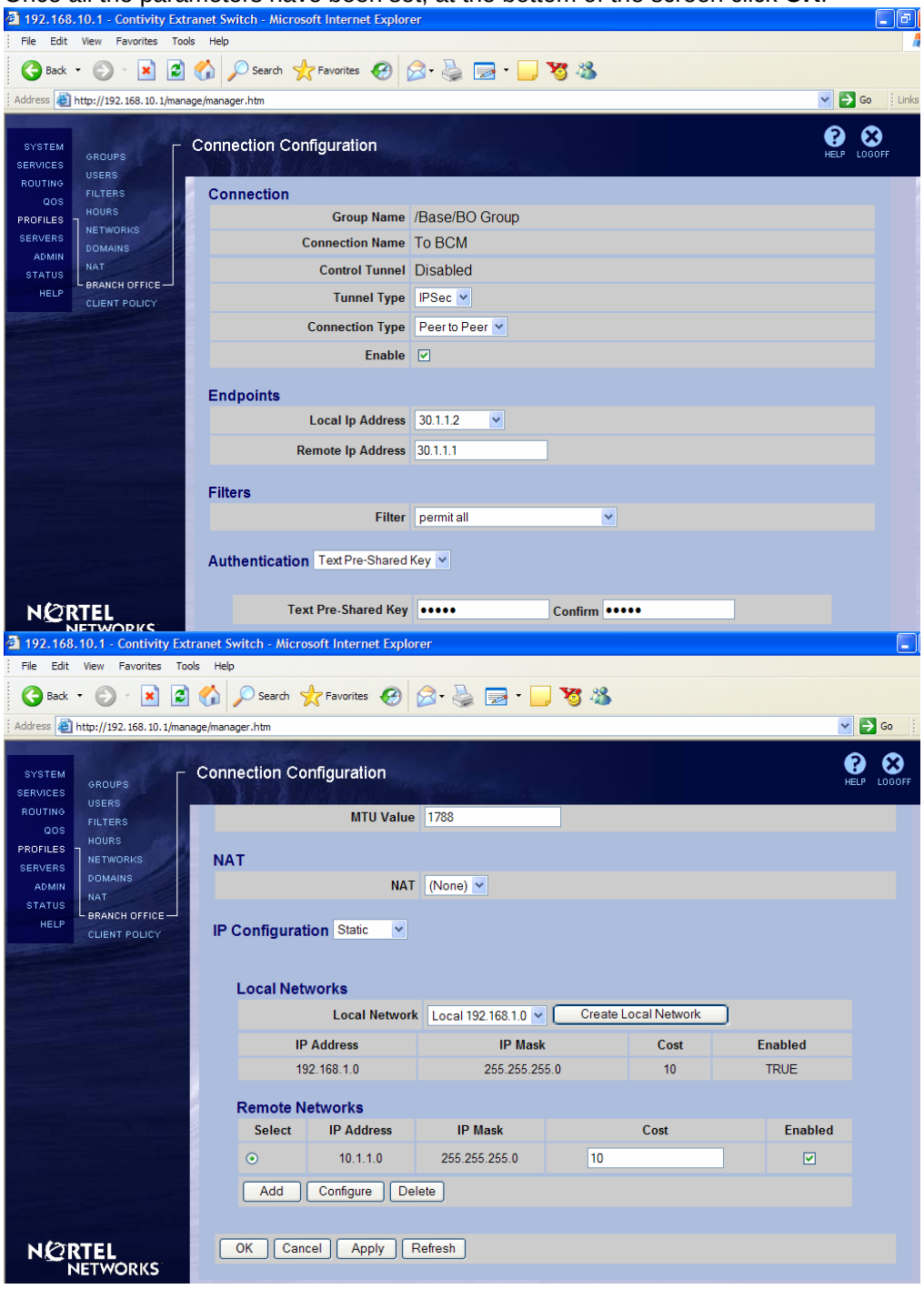


Listed under the **Remote Networks** tab is the configured remote network:



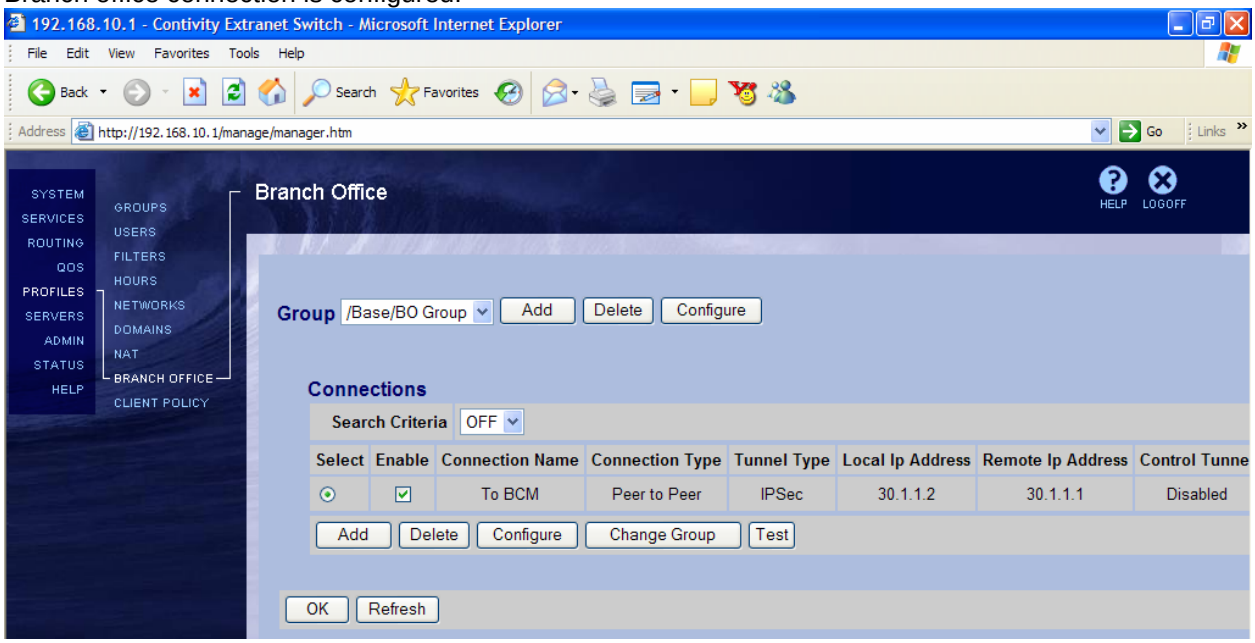
Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Once all the parameters have been set, at the bottom of the screen click **OK**:



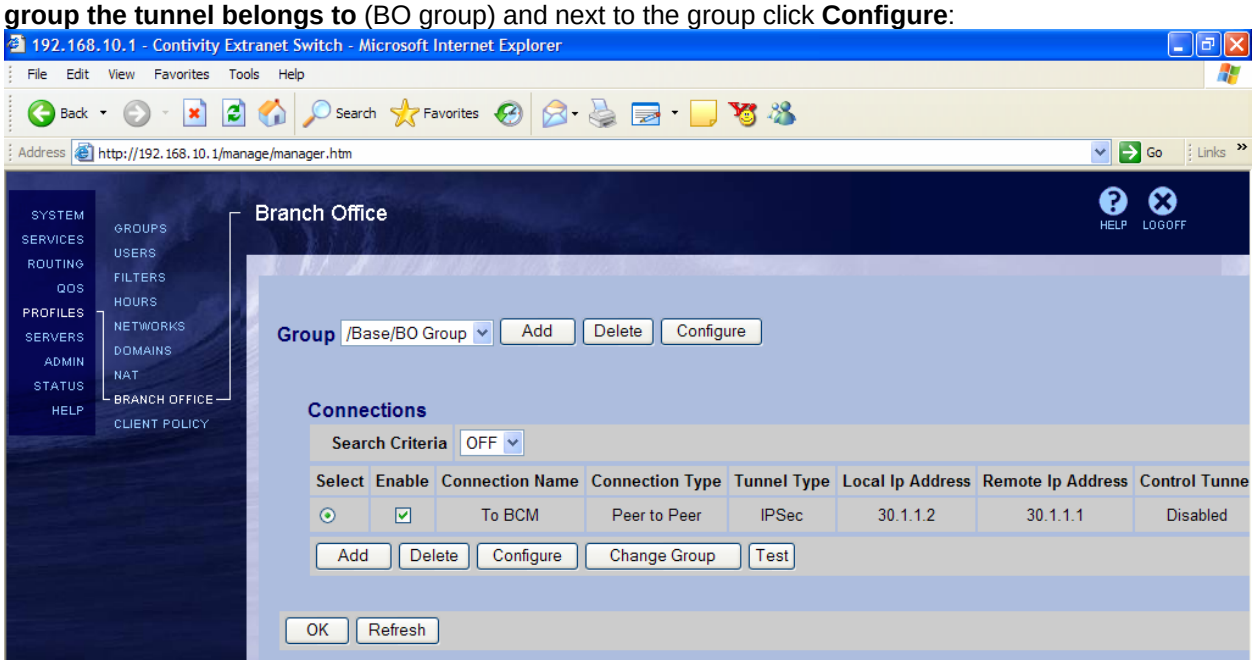
Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Branch office connection is configured:



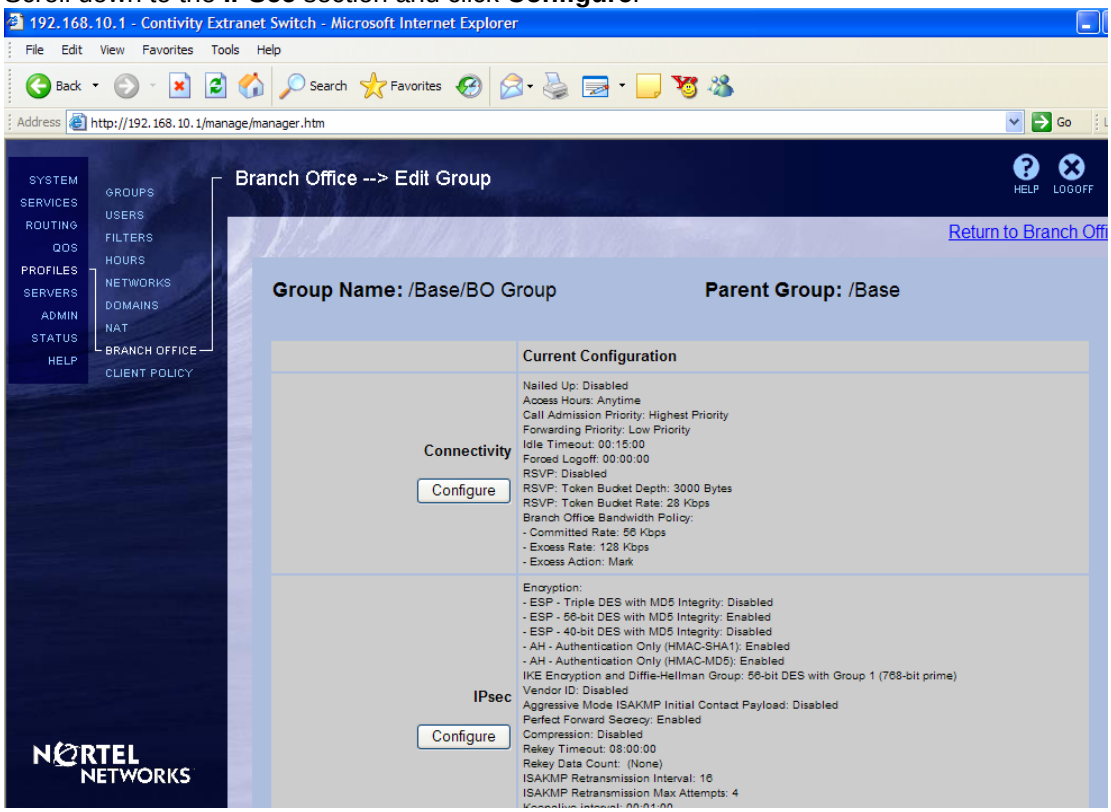
Configuring Branch Office IPSec parameters

Navigate **Profiles → Branch Office** to configure branch office IPSec parameters. Select **the group the tunnel belongs to** (BO group) and next to the group click **Configure**:



Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Scroll down to the **IPSec** section and click **Configure**:



To interoperate with the BCM, **Vendor ID** must be disabled for the group. Next to **Vendor ID** click **Configure**:

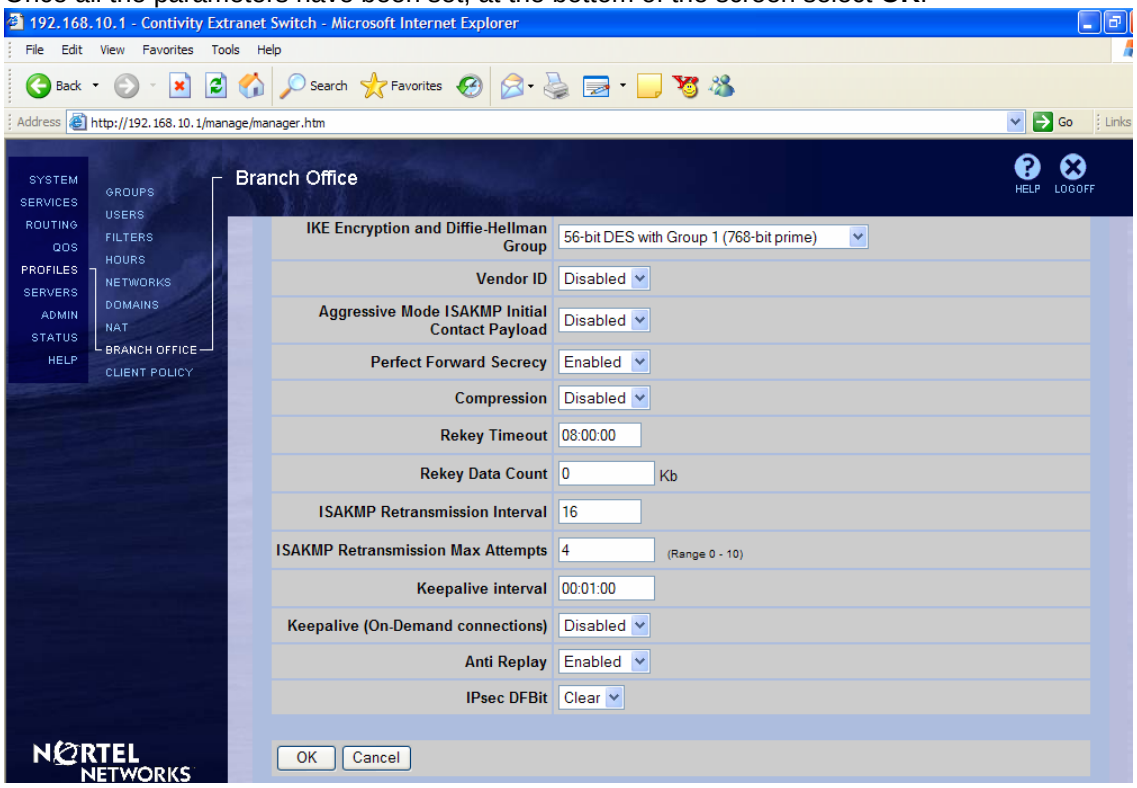
Screen refreshes. Next to **Vendor ID** select **Disabled**:

Compression also needs to be disabled to interoperate with BCM. Next to **Compression** select **Configure**:

Next to **Compression** select **Disabled**:

Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Once all the parameters have been set, at the bottom of the screen select **OK**:



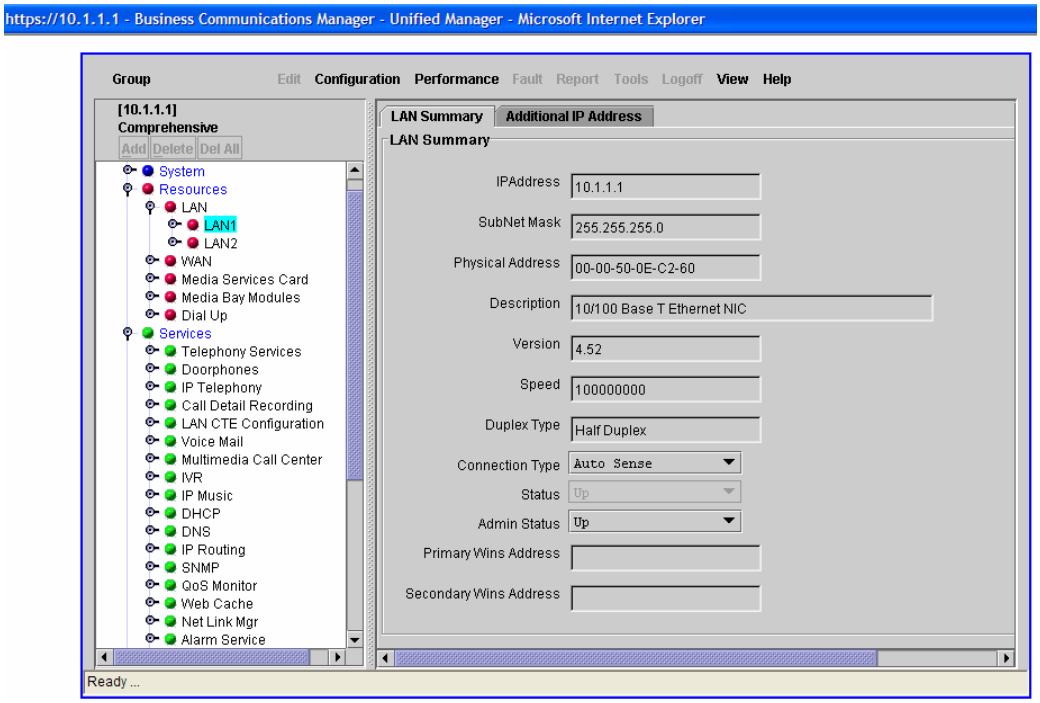
The Contivity gateway is now configured.

Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Configuring BCM

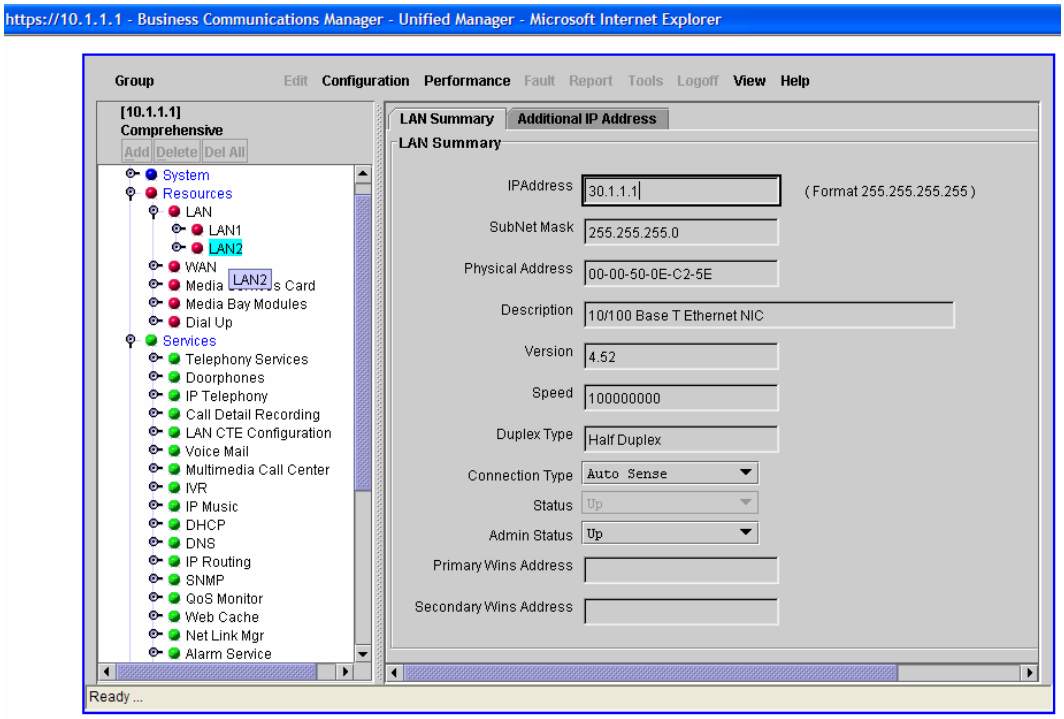
Configuring Interfaces

Log into the BCM **Unified Manager**. On the navigation Tree, expand the **Resources** key and then the **LAN** key. Click on **LAN 1.** This is the Private Interface. Enter IP 10.1.1.1 with a mask of 255.255.255.0:



Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Click on **LAN 2**. This is the Public Interface. Enter IP 30.1.1.1 with a mask of 255.255.255.0:



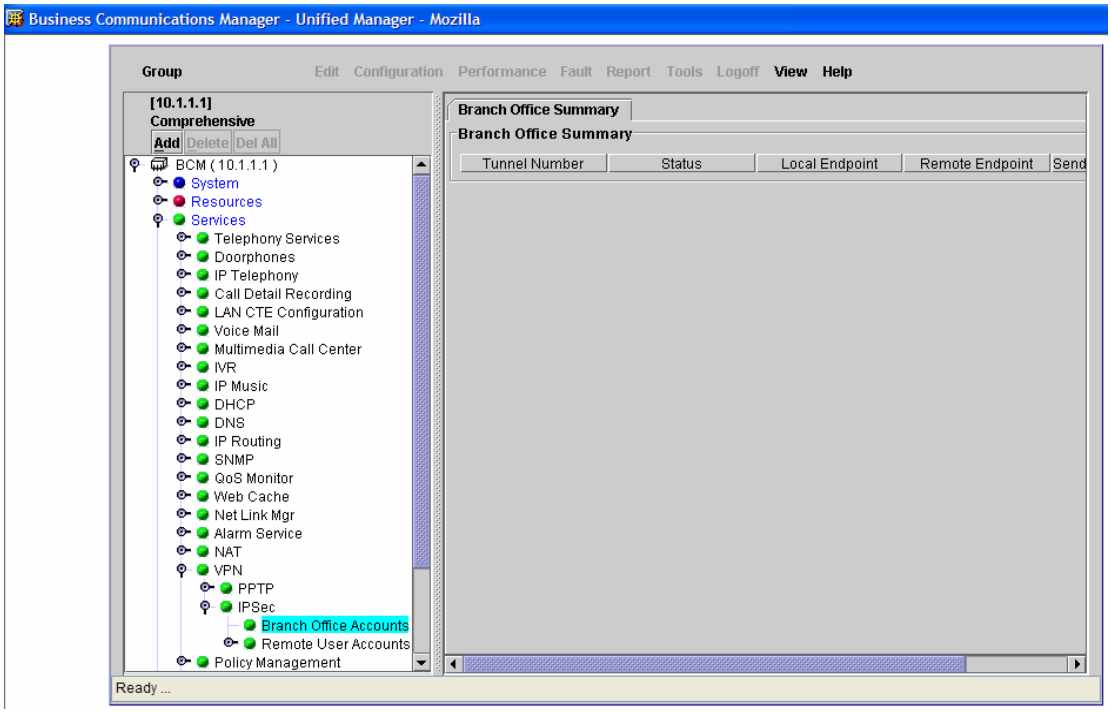
Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Configuring Branch Office tunnel parameters

On the navigation tree, expand the **Services** key, expand the **VPN** key, and expand the **IPSec key.**

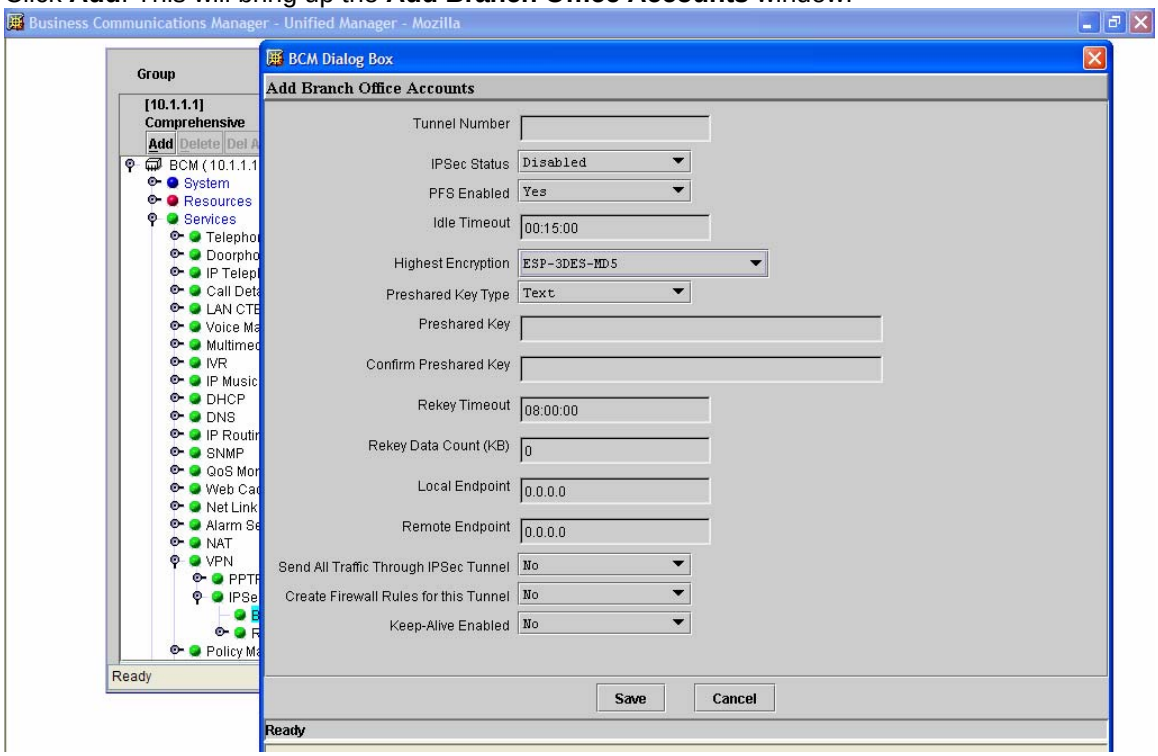
This will show two options, **Branch Office Accounts** and **Remote User Accounts**.

Click on the **Branch Office Accounts**. This will enable the **'Add'** button under the heading **Comprehensive.**



Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Click **Add**. This will bring up the **Add Branch Office Accounts** window:

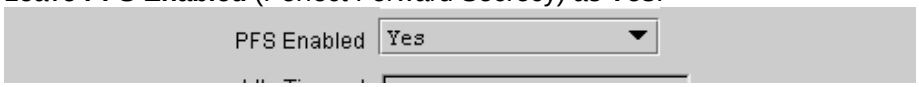


Fill out the “Add Branch Office Accounts” window as follows:

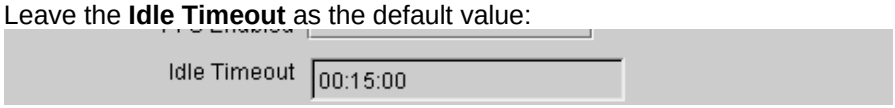
Enter the **Tunnel Number**, T1:

Set the **IPSec Status** to **Enabled**:

Leave **PFS Enabled** (Perfect Forward Secrecy) as **Yes**:

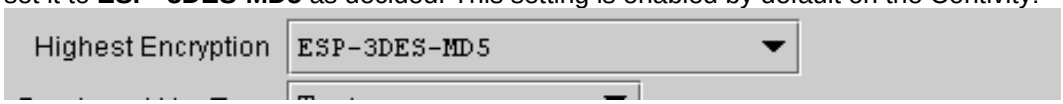


Leave the **Idle Timeout** as the default value:

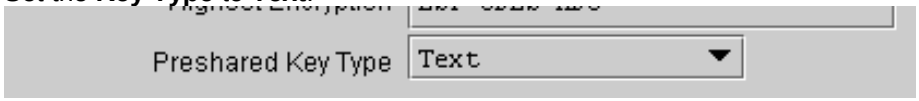


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

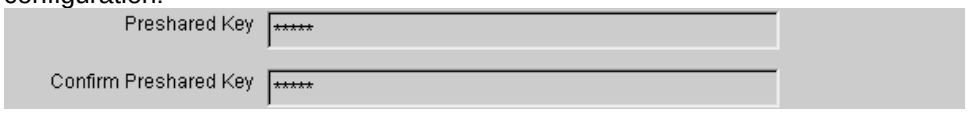
Set the **Highest Encryption** as desired and make sure it matches the Contivity setting. We will set it to **ESP- 3DES-MD5** as decided. This setting is enabled by default on the Contivity:



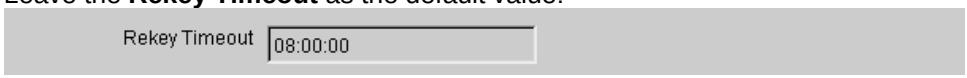
Set the **Key Type** to **Text**.



Set the **Pre-shared Key** to **12345** and confirm it to match the key entered in Contivity configuration:

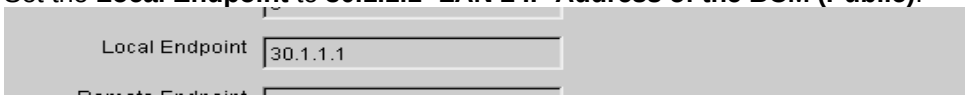


Leave the **Rekey Timeout** as the default value:

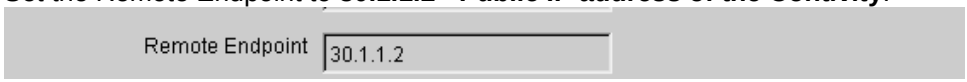


Leave the **Rekey Data Count(KB)** at **0**. We are not using this for this setup:

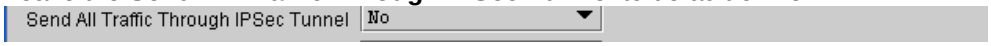
Set the **Local Endpoint** to **30.1.1.1- LAN 2 IP Address of the BCM (Public)**:



Set the Remote Endpoint to **30.1.1.2 - Public IP address of the Contivity**:

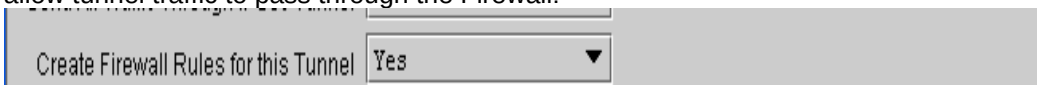


Leave the **Send All Traffic Through IPSec Tunnel** to default of **No**:

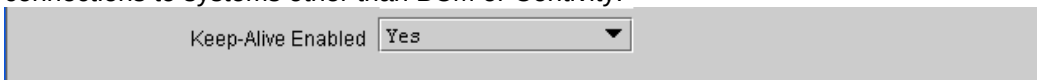


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

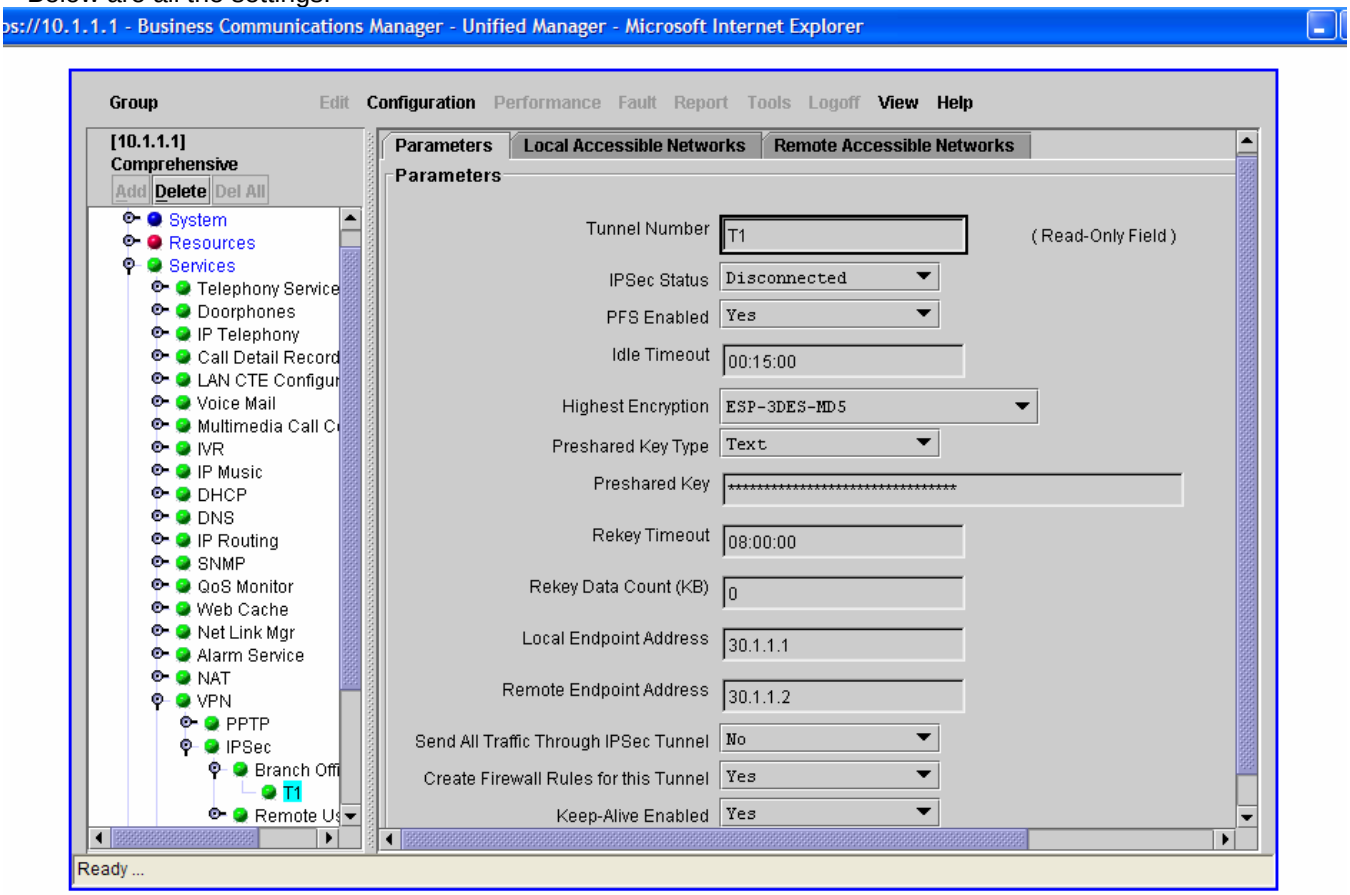
Set **Create Firewall Rules for This Tunnel** to **Yes**. This will create appropriate Firewall rules \ to allow tunnel traffic to pass through the Firewall:



Set **Keep-Alive Enabled** to **Yes**. Leave this setting at the default value of **No** for IPSec tunnel connections to systems other than BCM or Contivity:



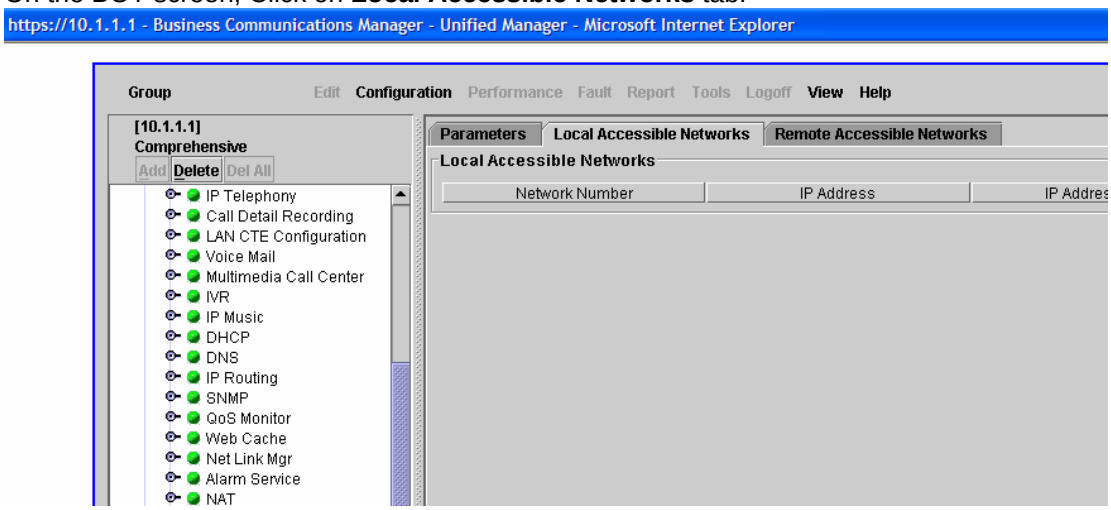
Below are all the settings:



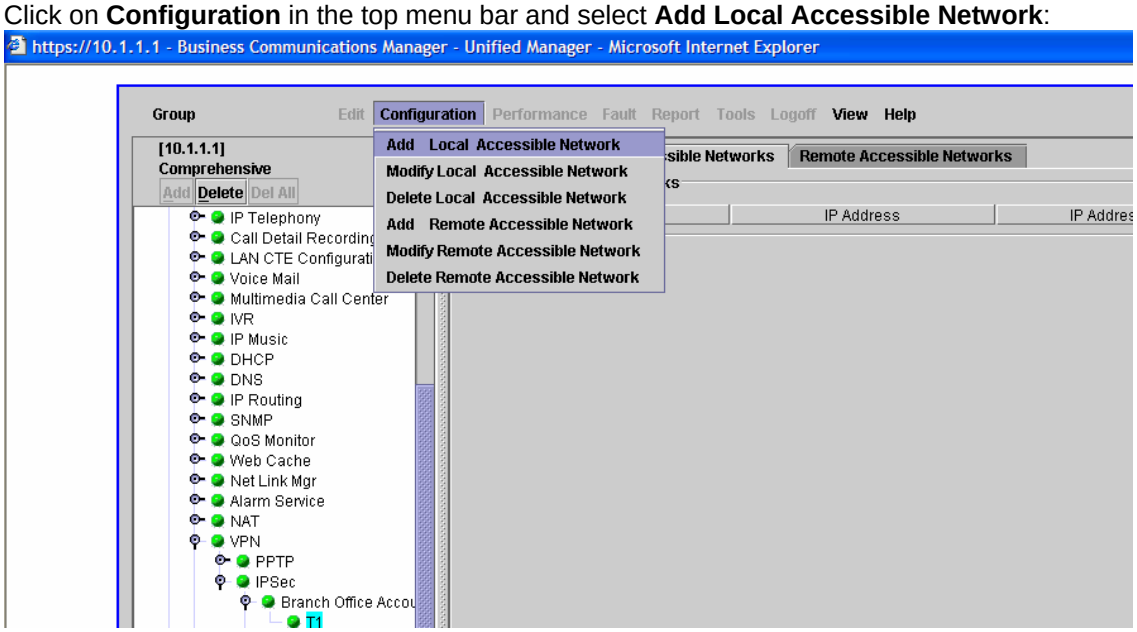
Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Configuring local and remote accessible networks

On the BOT screen, Click on **Local Accessible Networks** tab:

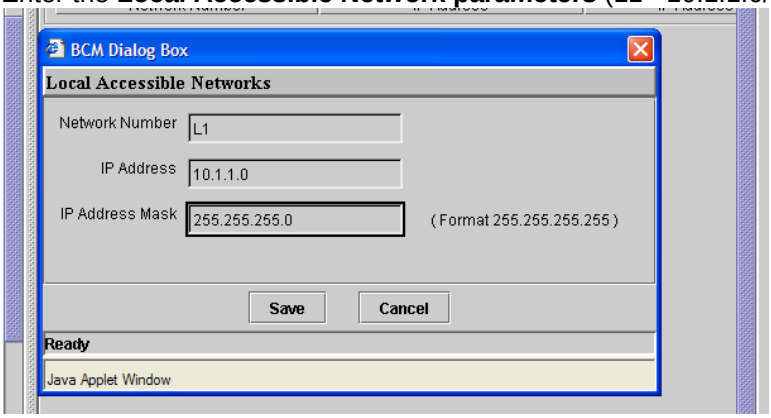


Click on **Configuration** in the top menu bar and select **Add Local Accessible Network**:

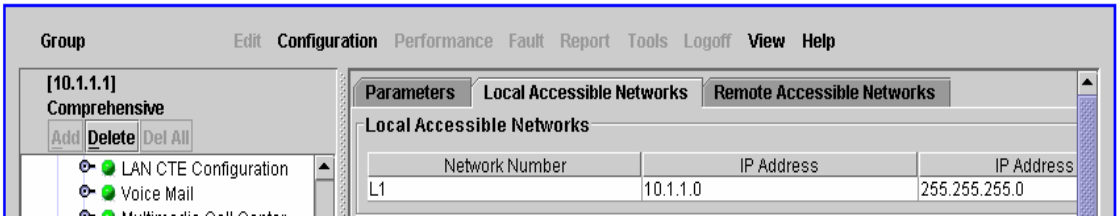


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

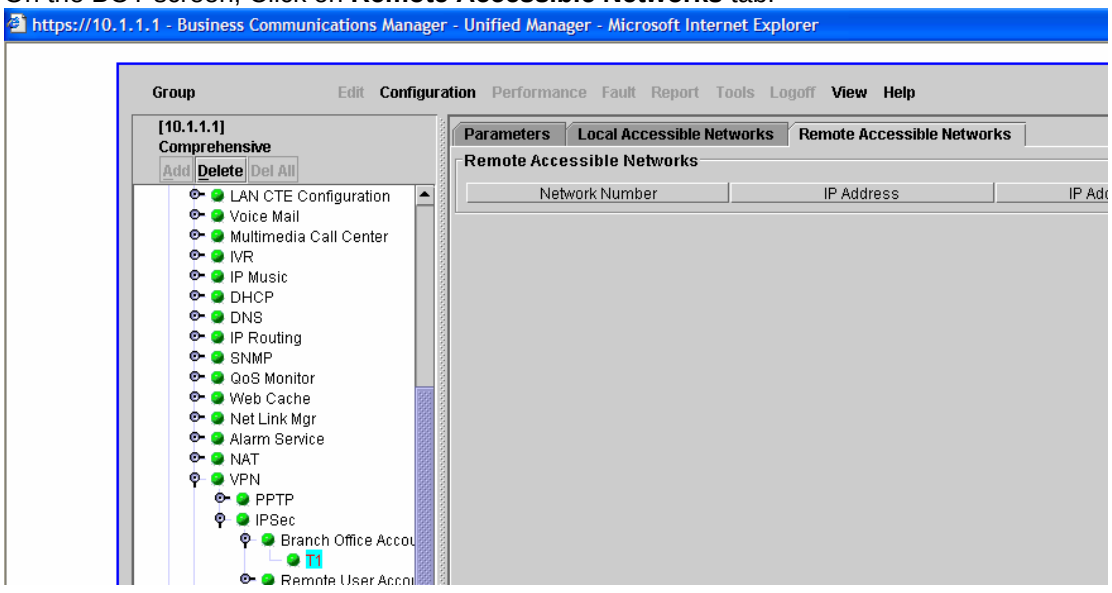
Enter the **Local Accessible Network parameters** (L1 - 10.1.1.0/24) and click **Save**:



A local network is defined:

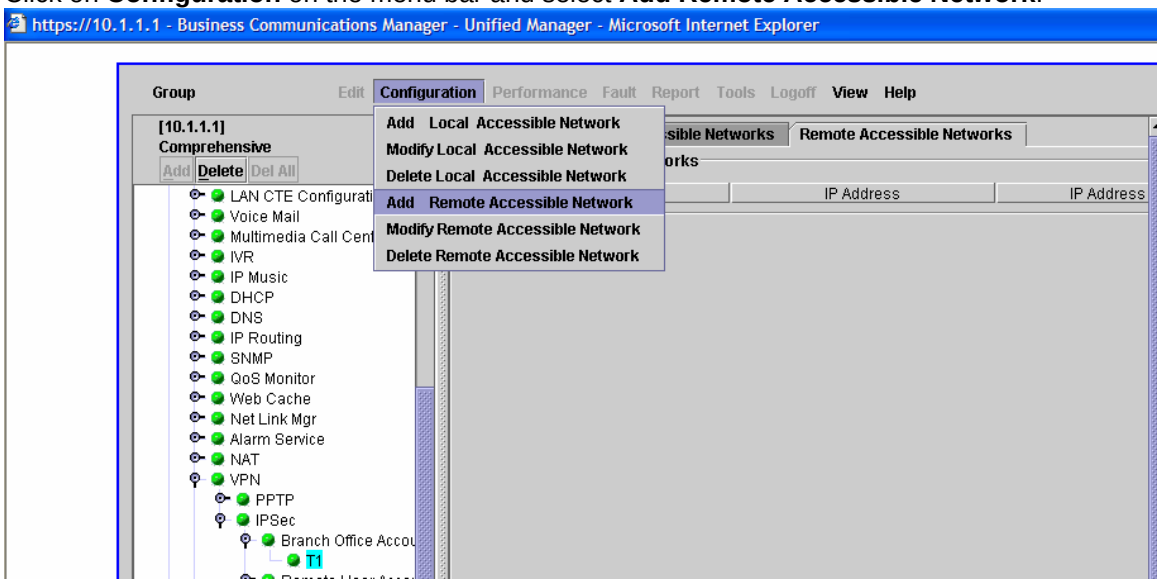


On the BOT screen, Click on **Remote Accessible Networks** tab:

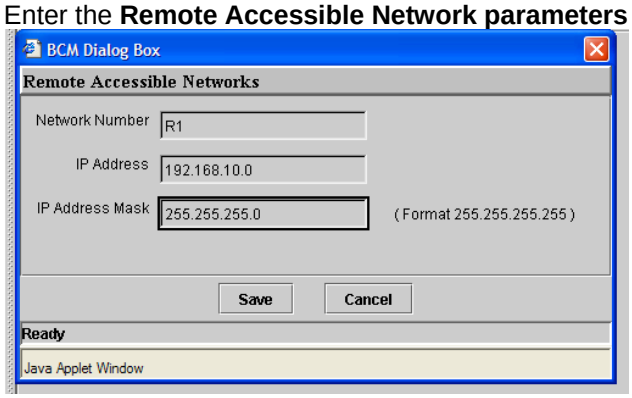


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

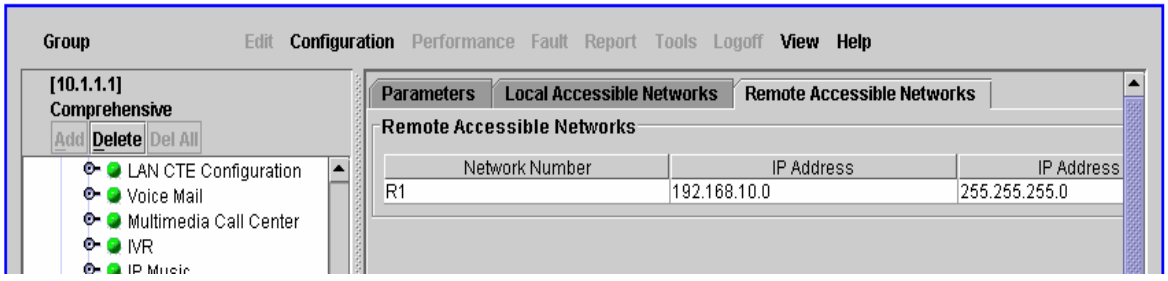
Click on **Configuration** on the menu bar and select **Add Remote Accessible Network**:



Enter the **Remote Accessible Network parameters** (R1 - 192.168.10.0/24) and click **Save**:



A remote network is created:

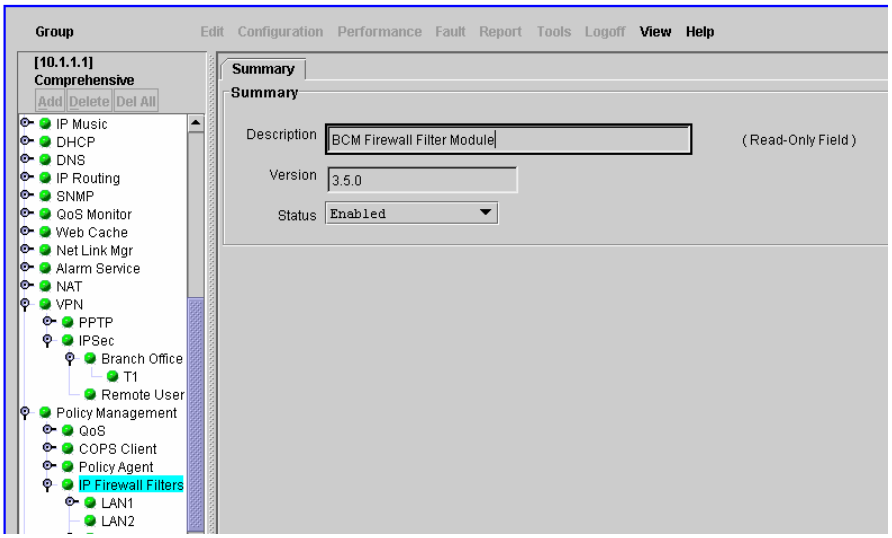


Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

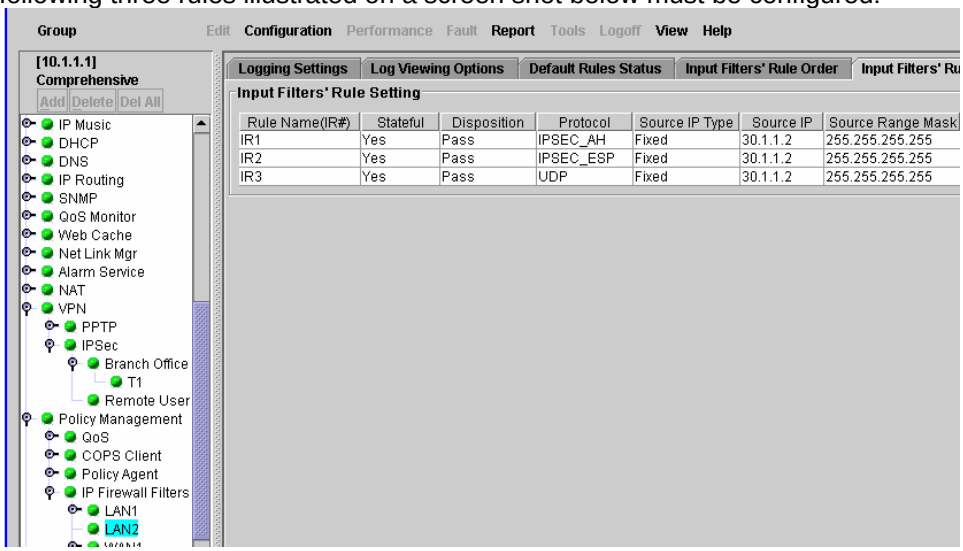
Verifying firewall rules

On the BCM, for a branch office tunnel to work, the **Firewall has to enabled** and the rules have to be configured to allow traffic through. The rules get created automatically when **"Create Firewall Rules for this Tunnel"** is set to **Yes** in section Configuring Branch Office tunnel parameters

On the navigation Tree, expand **Policy Management** key and click on **IP Firewall Filters**:



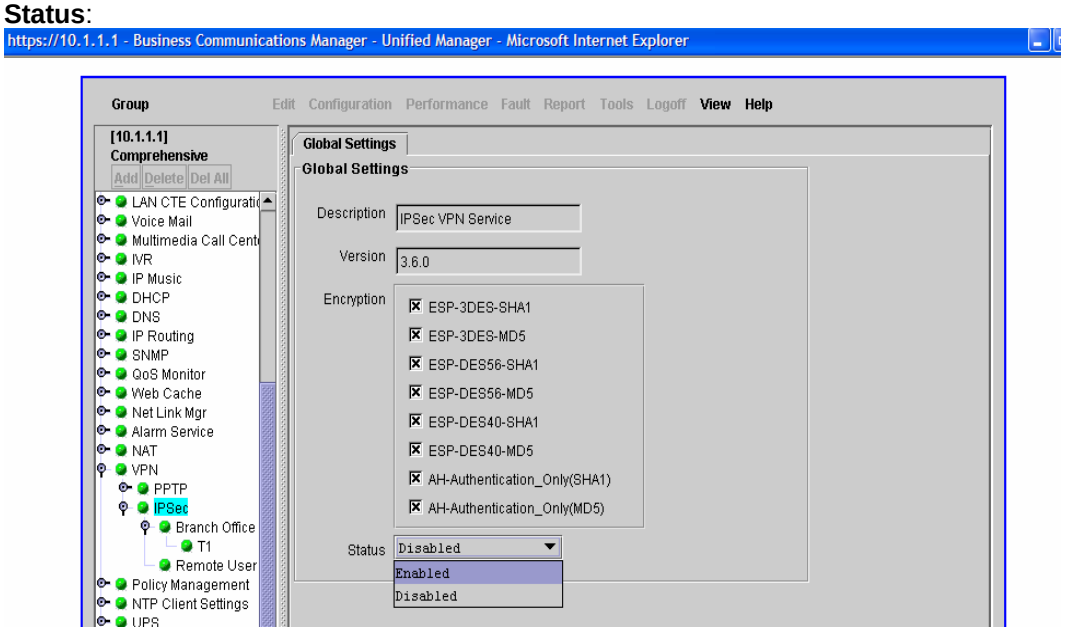
Expand **Policy Management** key, then expand **IP Firewall Filters** Key and click on **LAN2**. The following three rules illustrated on a screen shot below must be configured:



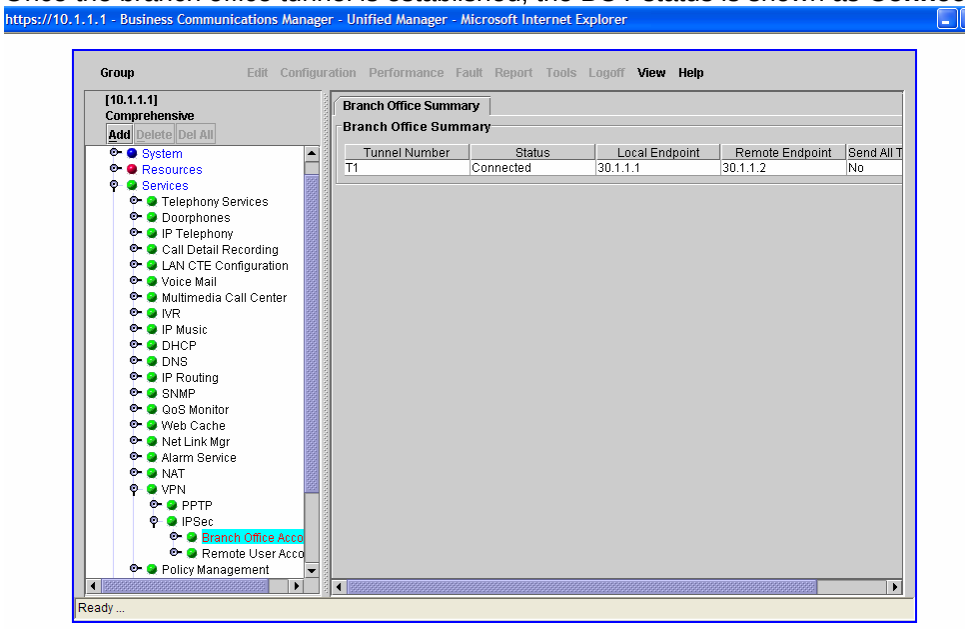
Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Enabling IPSec

From the navigation tree, expand the **VPN** key and click on **IPSec** and select **Enabled** next to **Status**:



Once the branch office tunnel is established, the BOT status is shown as **Connected**:



Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

Event Log

Below is CES event log of the successful tunnel establishment:

```
09/20/2004 16:34:13 0 Branch Office [01] IPSEC branch office connection
initiated to rem[10.1.1.0-255.255.255.0]@[30.1.1.1] loc[192.168.10.0-
255.255.255.0]
09/20/2004 16:34:13 0 Security [11] Session: IPSEC[30.1.1.1] attempting
login
09/20/2004 16:34:13 0 Security [01] Session: IPSEC[30.1.1.1] has no
active sessions
09/20/2004 16:34:13 0 Security [01] Session: IPSEC[30.1.1.1] T0 BCM has
no active accounts
09/20/2004 16:34:13 0 Security [01] Session: IPSEC[30.1.1.1]:11 SHARED-
SECRET authenticate attempt...
09/20/2004 16:34:13 0 Security [01] Session: IPSEC[30.1.1.1]:11
attempting authentication using LOCAL
09/20/2004 16:34:13 0 Security [11] Session: IPSEC[30.1.1.1]:11
authenticated using LOCAL
09/20/2004 16:34:13 0 Security [11] Session: IPSEC[30.1.1.1]:11 bound
to group /Base/BO Group/T0 BCM
09/20/2004 16:34:13 0 Security [01] Session: IPSEC[30.1.1.1]:11
Building group filter permit all
09/20/2004 16:34:13 0 Security [01] Session: IPSEC[30.1.1.1]:11
Applying group filter permit all
09/20/2004 16:34:13 0 Security [11] Session: IPSEC[30.1.1.1]:11
authorized
09/20/2004 16:34:13 0 Security [11] Session: network IPSEC[10.1.1.0-
255.255.255.0] attempting login
09/20/2004 16:34:13 0 Security [11] Session: network IPSEC[10.1.1.0-
255.255.255.0] logged in from gateway [30.1.1.1]
09/20/2004 16:34:13 0 ISAKMP [02] ISAKMP SA established with 30.1.1.1
09/20/2004 16:34:13 0 Security [12] Session: IPSEC[30.1.1.1]:11
physical addresses: remote 30.1.1.1 local 30.1.1.2
09/20/2004 16:34:13 0 Security [12] Session: IPSEC[-]:12 physical
addresses: remote 30.1.1.1 local 30.1.1.2
09/20/2004 16:34:13 0 Outbound ESP from 30.1.1.2 to 30.1.1.1 SPI
0x00163b9d [03] ESP encap session SPI 0x9d3b1600 bound to s/w on cpu 0
09/20/2004 16:34:13 0 Inbound ESP from 30.1.1.1 to 30.1.1.2 SPI
0x00094683 [03] ESP decap session SPI 0x83460900 bound to s/w on cpu 0
09/20/2004 16:34:13 0 Branch Office [00] 4f899f0
BranchOfficeCtxtCls::RegisterTunnel: rem[10.1.1.0-
255.255.255.0]@[30.1.1.1] loc[192.168.10.0-255.255.255.0] overwriting
tunnel context [ffffffff] with [4f7b8b8]
09/20/2004 16:34:13 0 ISAKMP [03] Established IPsec SAs with 30.1.1.1:
09/20/2004 16:34:13 0 ISAKMP [03] ESP 3DES-CBC-HMAC-MD5 outbound SPI
0x163b9d
09/20/2004 16:34:13 0 ISAKMP [03] ESP 3DES-CBC-HMAC-MD5 inbound SPI
0x94683
```

Tech Tip
Contivity Secure IP Services Gateway

Contivity – BCM IPSec Peer-to-Peer Tunnel Using Pre-Shared Key Authentication

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